
CHAPTER VI

Shoreline Cleanup

Cleaning contaminated shoreline areas proved to be more challenging and costly than cleaning oil off the water surface. The affected shorelines in Alaska were in a remote area characterized by abundant rainfall, gale-force winds, low cloud cover, and high waves that was difficult and dangerous to reach and presented more severe working conditions than anywhere in the contiguous United States. The coast, carved by glaciers, was steep with little shoreline development. Roughly 90 percent of the shoreline of the affected region consisted of rugged bedrock and boulders that stretched from below low tide mark to well above the high tide limits. The steep, short “beaches” consisted of heavily weathered materials ranging from sand to boulders in size.

In the remote, harsh environment of Prince William Sound and the Gulf of Alaska, officials had difficulty placing and supporting shoreline cleanup workers. Environmental objections prevented Exxon from establishing camps for workers on the beaches, so Exxon transported them back and forth to work sites from two Navy berthing ships. The 569-foot U.S.S. *Juneau*, for example, at one point housed 353 civilian technicians and laborers just off Smith Island. A flotilla of six flat-bottomed landing craft ferried workers to beaches.

In addition to logistics problems, the cleanup effort was hampered by confusion about responsibility. With so many state and federal agencies involved it was sometimes unclear who had the final authority for determining which beaches would be cleaned and when. When the oil was on the water, responsibility for the cleanup was comparatively well-defined. Under the National Contingency Plan, the Coast Guard, through the federal on-scene coordinator, had authority to decide how the cleanup would be handled. After the spill reached the beach, however, other agencies and interest groups joined in the process of deciding how the oil should

be removed and from which shores it should be removed first. While the responsibility presumably still rested with Exxon and oversight remained with the Coast Guard, the oil now rested on beaches owned by the state of Alaska, and the fish, mammals, and birds that might be affected were the special province of the National Marine Fisheries Service and U.S. Fish and Wildlife Service. Several federal agencies were responsible for regulations based on the Coastal Zone Management Act, Clean Water Act, Clean Air Act, and National Historic Preservation Act that determined what could or could not be done to clean the beaches.

Each agency had some veto power over cleanup actions that might adversely affect the resources it regulated. No single decision maker had complete authority to weigh the benefits and adverse effects of possible cleanup methods and decide on a course of action. Concern about the possible effects of beach cleanup on the marine environment and the fishing industry made decision makers cautious about adopting methods that would put dispersants in the water or physically disturb the beaches. Coast Guard officials often had difficulty weighing competing authorities and dealing with the shifting requirements of environmental groups and other interested parties. For example, if Exxon washed the contamination off the beaches back into the sea, the fisheries people objected, while environmental groups who were interested in protecting seal pupping areas preferred to have the contamination washed off the beaches.

Early in the cleanup officials created a Shoreline Cleanup Committee, which included representatives from the Coast Guard, Exxon, Alaska Department of Environmental Conservation, U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration, Chugach Alaska Native Corporations, U.S. Environmental Protection Agency, U.S. Forest Service, and other state agencies, to weigh the competing authorities and establish shoreline priorities. On 8 April these agencies developed and signed shoreline cleanup priority guidelines.¹

Although media accounts left the impression that the decisions were being made by committee, Admiral Robbins made the final decision about cleanup priorities. Exxon teams evaluated a particular shoreline and submitted a proposal

to the Shoreline Cleanup Committee about how they would clean it. The committee then made a recommendation to Admiral Robbins, and if he agreed, he directed Exxon to do the work on that particular beach. Two FOSC representatives inspected the beach to determine if it had been adequately cleaned and then asked the state representative for his opinion. Regulations required the FOSC to "consult" with the state of Alaska in his decision-making process, but Robbins quickly added that "consult" did not necessarily mean "concur." If the FOSC and state representatives disagreed about what should be done, the FOSC had the final decision-making authority. Robbins explained, "It had to be that way. There was no other way it would work. You can't have a committee out there making decisions."²

There were many variables affecting how and when a specific shoreline would be cleaned. Officials prioritized shorelines according to the degree of oiling (heavy, moderate, or light), the presence of biological or ecological resources (pinnipeds, fisheries, aquaculture), and the presence of social resources (historical or archaeological). They ultimately developed a general strategy for cleaning shorelines. The first priority was pinniped haulouts at Agnes, Smith, Little Smith, Seal, and Green Islands and at Applegate Rocks where seal and sea lion pups would soon be present. The second, third, and fourth priorities were shorelines with biological resources present and social resources absent. The only variable was the level of contamination, the second priority having the heaviest contamination and the fourth priority the lightest.³

Devising a detailed strategy for the cleanup operations was complicated by the fact that no accurate information existed on the scope of the problem. Policymakers had no exact figures on the miles of contaminated shoreline. It was difficult to determine the degree of contamination from the air, because the gray lava rocks on the shoreline appeared black when wet.

As part of the effort to develop an effective overall strategy for the cleanup, Admiral Nelson directed Exxon to provide a shoreline cleanup plan by 14 April, with timelines, long-term manpower requirements, and support requirements. By that time the oil had already reached the western side of Cook Inlet. Exxon officials submitted their plan on Saturday,

15 April. When Admiral Yost reviewed the plan, he gave it his blessing, but he later expressed “serious reservations” and demanded more work on the plan. The Shoreline Cleanup Committee complained that the 21-page plan, which called for Exxon to clean 305 miles of shoreline (mostly by flushing with cold seawater) by 15 September, was too “sketchy” and optimistic, based as it was on good weather conditions.

Admiral Yost gave Exxon until 1 May to come up with a revised plan that would deal with oil contamination outside Prince William Sound and the disposal of oily waste. The plan that Exxon submitted on 1 May called for 3,400 cleanup workers on the shoreline in Prince William Sound plus an unspecified number outside the sound and targeted completion by 15 September. The May plan proposed that workers use cold water flushing and hot water pressurized hoses to clean 85 miles of shoreline by 1 August and that 191 miles of lightly oiled beach be left for natural cleansing. It called for the cleanup of 364 miles of shoreline as opposed to 305 in the 15 April plan. Alaska District staff and Corps laboratory personnel who were on temporary duty in Alaska spent days evaluating the 1 May plan for the AK-JTF.

Dennis D. Kelso, Commissioner of the Alaska Department of Environmental Conservation, complained to Admiral Yost that the revised plan did not adequately address the significant weaknesses that the state of Alaska had identified in the initial 15 April plan and demanded that Exxon correct these deficiencies. The plan should address affected areas outside of Prince William Sound that had received considerable oiling since mid April, such as shorelines along Kenai Peninsula, Kodiak Island, and the Alaskan Peninsula. Kelso contended that Exxon’s estimates on shoreline cleanup rates were rooted in overly optimistic assumptions. The proposed method, cold water washings, he argued, would not clean the shoreline adequately or even be appropriate for many shoreline areas. Finally, Kelso requested that Exxon provide more detail about milestones and how it reached its conclusions.⁴

Admiral Yost observed that the plan was “a little light, and a little thin on facts and substantiation.” Admiral Robbins also expressed reservations. After carefully reviewing the plan, he wrote Otto Harrison, General Manager, Exxon Company, “The approach you describe is a sound one, but

I remain seriously concerned that the investment of resources you describe will not be able to clean the 300+ miles of shoreline in the time allotted." The plan was a "well designed approach," he added, but "needs elaboration." Robbins requested that Exxon substantially increase its workforce to increase the cleanup rate; provide an inventory of potentially critical path equipment items that they would need to accelerate their effort so that Robbins could help them locate such equipment; submit a plan for beach cleanup work outside Prince William Sound; anticipate a review of the cleanup in the spring of 1990; and retain the U.S.S. *Fort McHenry* and the U.S.S. *Juneau* as hotel and support ships for the duration of the high level cleanup effort. In response to intense pressure from the Bush administration, which called the 1 May plan inadequate, Exxon later agreed to increase the number of workers from 3,400 to 5,000.⁵

Developing and implementing an effective shoreline cleanup strategy was also hampered by the lack of a clear definition of "clean" and acceptable standards. As Exxon devised its ambitious shoreline cleanup plans for Prince William Sound and the Gulf of Alaska, federal and state officials grappled with the question, "What is clean?" Scientists said they were working in a gray area where there were no generally accepted standards. Some cleaning could go too far. Peter McGee, the on-site coordinator for the state environmental agency, complained that there was no fast, objective method to determine a standard of cleanliness for the beaches. With no time to take samples and do the normal kind of analysis, operators had to rely on visual, on-the-spot determination.

State officials and the media criticized Admiral Robbins for calling the shorelines "clean." After the crews finished their work, the beaches were not as "clean" as they were before the spill, so the Alaska Department of Conservation refused to let the Coast Guard use the word "clean." When Exxon officials suggested using the word "treated," Robbins agreed. "Clean," he observed, is a relative term. The shorelines were not totally "clean," but a level of contamination had been removed. Robbins believed the ultimate goal in cleaning up a spill was to stabilize the shoreline to the point where it would not cause more damage to the surrounding

environment (i.e., to prevent winter storms from carrying the oil offshore and redepositing it), and to clean the shoreline as much as possible without damaging it more than you would by letting the oil degrade naturally. The standards for “clean” depended to some extent on the area. Cleanup officials had to decide, Robbins observed, how much they were going to do on each shoreline segment. Did they want to clean a beach with such intensity that they chased away all of the wildlife or just stabilize the oil?

As FOSC, Admiral Robbins decided when Exxon could move on to another shoreline. Robbins, however, never told Exxon that it would not have to return to a particular beach at some time in the future. He believed that Exxon did as much as could reasonably be expected. Exxon needed to treat a beach to a certain point and then move on to one with more environmental impact or else it would spend the entire summer on one beach.⁶

In mid May the FOSC established a three-phased approach to aid in determining cleanup priorities in Prince William Sound and western Alaska. In phase one operators stabilized the beach and removed gross contamination to the extent that the oil would not migrate from the site. The site would have to be reassessed at a later date to determine if further treatment was necessary. Phase two marked the removal of the majority of surface oil contamination. The site required reassessment later. During phase three, all contamination was removed and no further treatment was required unless the beach was re-oiled. The phased approach allowed cleanup crews to make progress while maintaining the ultimate goal of removing all contamination. A Coast Guard operations analysis team worked with the FOSC staff to design a system of tracking and productivity reporting that would clarify what had been done and what remained to be done.⁷

An even greater problem than priorities and strategies was the primitive and ineffective techniques for shoreline cleanup. To a great extent the techniques mimicked those used after the 1978 *Amoco Cadiz* spill. In the *Amoco Cadiz* cleanup 10,000 workers, including sailors, soldiers, hired labor, volunteers, and the local population, struggled to clean 250 miles of contaminated French shoreline. They worked



Captain Brice (in uniform) discusses shoreline cleanup operations.

with their hands, wielding rakes, shovels, plastic buckets, brooms, and garbage cans. They painstakingly poured the contaminated matter from small buckets into larger buckets and lugged them to gathering points. Workers were not always environmentally sensitive, however. On the bird sanctuary of the Ile Grande, for example, bulldozers scraped away topsoil and ground cover, which promoted the erosion of the marsh they were trying to clean. Some mayors sent fleets of bulldozers and earth-moving equipment to do work that should have been done by hand. The equipment destroyed substrata life and contributed to further erosion of the shoreline.

Workers tried nine different sorbent products on the French beaches: sawdust, vegetable fibers, leather scraps, rubber powder, polyurethane foam, plaster, pine bark, perlite, and shredded paper strips. The rubber powder proved most useful. There were also inconclusive experiments with chemicals to promote biodegradation of the oil. Cleanup crews washed beaches with water pumps. High pressure equipment (400–900 kilograms per square centimeter) was quickly abandoned as too expensive, damaging to concrete structures, and a danger to operators. Medium pressure (140 kilograms



Shoreline cleanup operations.

per square centimeter) hot (80–140 degrees Celsius) water pumps were more effective, cheaper, and safer.⁸

In the Alaska cleanup operations, state officials restricted the cleanup operations to the following methods: wiping individual rocks by hand and absorbing surface oil from depressions and crevices, flushing the oil from the beaches with the application of warm or cold seawater, and collecting the oil-contaminated seaweed and other organic matter on the shores by hand. Other cleanup methods were tested with varied results but were not widely used, including the spot application of hot water to beaches or rocky shoreline, burning, vacuum collection of pooled oil, and bioremediation.

The most prevalent method was to pump huge amounts of cold saltwater from landing craft offshore to the top of the beaches, so it flooded the rocks as it ran back to the sea. Meanwhile, workers with fire hoses squirted the surface of the beach to knock oil off the rocks. The flood of water kept the oil suspended while it was carried to the ocean where the oil was captured in booms and retrieved by skimmers.⁹

This technique proved ineffective. Oil seeped to a depth of several feet. Each night the tide lifted oil to the surface or washed the oil cleaned off the day before back ashore.

Thus, despite six washings, a stretch of rocky beach on McPherson Bay on Naked Island remained black. Five days of intensive washing on Smith Island shortly before Vice President Quayle's visit decreased the amount of oil, but each morning discouraged workers found that the rocks they had washed with such effort were black again.

As weeks passed the idea of using hot water rather than cold became more popular. The vegetation on the beaches was already dying, some reasoned, so it was time for more drastic measures. The units that Exxon brought to the scene, however, could not produce enough hot water to work continuously. When they did work, they only applied hot water to an area "the size of a postage stamp." Hot water pumps from France, built for use in the *Amoco Cadiz* spill, worked better. In the seal pup birthing areas, Exxon was allowed to cut and remove seaweed from the rocks instead of washing it. Exxon had also tried spreading peat moss on the rocks to absorb the oil. Removing seaweed was easier than cleaning it and prevented oil-soaked vegetation from polluting the water, but seaweed was an important food source.¹⁰

By 25 May there were 386 Exxon employees, 4,306 VECO contractors, 1,177 Norcon contractors, and 2,603 other workers involved in the cleanup. By 15 September, when Exxon stopped its shoreline cleanup operations for the winter, a total of 1,632 miles of shoreline (including 708.7 miles in Prince William Sound) had been treated and approved for demobilization by the FOSC.¹¹

The 708.7 miles, however, were not completely free of contamination. Operators were never able to find an effective technique for cleaning shorelines. Despite Exxon's huge investment in time, money, and manpower, after months of intensive cleanup work, much contamination remained.